300 ELM STREET
PROPOSED COMMERCIAL BUILDING
ST. THOMAS, ONTARIO

FUNCTIONAL SERVICING REPORT

CJDL
Consulting Engineers

25012
1 October 2026

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CJDL
Consulting Engineers

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300 ELM STREET

PROPOSED COMMERCIAL BUILDING

ST. THOMAS, ONTARIO

FUNCTIONAL SERVICING REPORT

1.0 INTRODUCTION

Cyril J. Demeyere Limited (CJDL) has been retained by Fatime Sherifi to prepare Site Grading & Servicing Plans as well as the corresponding Functional Servicing Report to support the construction of a proposed commercial building at 300 Elm Street, St. Thomas, Ontario. Fatime Sherifi is the registered owner of the subject lands where the development is to take place. Existing access to the site will continue to be provided through entrances off of Elm Street and First Avenue.

The subject land is legally described as Part of Lot 71, Registered Plan 270, City of St. Thomas, County of Elgin. The lot is located on the north east corner of the intersection of Elm Street and First Avenue. The subject lands are bounded by an existing institution (The Junction Place of Worship) on the east and existing residential to the north. The Site is zoned C6-22 which is permissive of the proposed use. A minor variance was filed and approved to permit the reduced setbacks and gross floor area associated with this development.

2.0 SANITARY SERVICING

Currently there are two existing sanitary services provided to this property. The first, located approximately 20m east of the manhole at the intersection of First Avenue and Elm Street, is currently used to service the existing building. This 150mmø service will remain unchanged and continue to solely provide service to the existing building.

The proposed commercial building will be serviced by the second existing sanitary service currently provided to the property. This service is also a 150mmø PDC and is stubbed at the property line approximately in the centre of the Elm Street frontage. The proposed sanitary connection will be at the property line to this existing service and extended at 2% slope to the proposed building. There is sufficient depth on the existing PDC to provide sanitary service to the entire new building.

These PDC's outlet to a 450mmø sanitary sewer at 0.83% on Elm Street. Given the large capacity of this pipe, and minimal anticipated increase in flows from the site, it is anticipated that there is adequate capacity in the existing sewer to support this connection.

3.0 WATER SUPPLY

The existing building is serviced by a 25mmø copper water service located off of the 400mmø watermain on Elm Street. This existing service will remain the only water service to the property. The proposed use is expected to result in a minimal increase in water demand from the site, therefore it has been determined that the existing service will contain capacity to service the existing building. The new building will be serviced by a 25mm PEX water service that will be connected to the existing building water system after the meter, and then run to the new building under the parking lot. There will remain 1 water meter and 1 water service to this property.

The 400mm diameter watermain on Elm Street feeds a hydrant located across from the Site. It is anticipated that this existing hydrant will contain sufficient flow to meet the OBC and FUS fire flow requirements for this development.

Firefighting flows were determined in accordance with the "Water Supply for Public Fire Protection – A Guide to Recommended Practice (2020)" by the Fire Underwriters Survey. A building area of 273.6m^2 with a 1-storey building height of 3.5m to underside of roof was used. A Class D building occupancy was used to describe this building use. The building was assumed to be constructed of ordinary, combustible materials with an OBC Section 3.2.2.45 compliant 1 h minimum fire resistance rating. A domestic flow of 28m^3/ha was assumed in accordance to the "City of St. Thomas Design Guidelines Manual" (2023). Detailed water demand and fire flow calculations are included in Appendix 'A' of this report. Table 1 included below illustrates the required domestic and fire flows for the proposed commercial building;

Table 1: Water Demands Calculations for the Proposed Building

Description of Development	Site Area (ha.)	Average Daily Demand (L/sec)	Maximum Daily Demand (L/sec)	Peak Hour Demand (L/sec)	Fire Flow (OBC) (L/sec)	Fire Flow (FUS) (L/sec)	Total Flow [Fire (FUS) + max day] (L/sec)
Commercial Building	0.2	0.07	0.24	0.53	45	100	100.24

4.0 STORMWATER MANAGEMENT

The new building is proposed to be located in an area that is currently a paved parking area. Converting this area to a building does not change the amount of hard surface on the site and therefore there is expected to be negligible change in the runoff discharged from this property. For this reason, it is proposed that there be no change in the stormwater drainage system on the property. The existing catch basin will remain and will provide an outlet for the same amount of hard surface from the site.

The current catch basin outlets to a 450mmø storm sewer on First Avenue. The outlet is a 200mmø clay pipe that runs north west out of the catch basin before bending to run directly east towards First Avenue on the north side of the existing building. The outlet currently functions well and will continue to serve as the stormwater outlet for this site.

The parking lot will be regarded as required to direct all flows around the building to the existing storm sewer system. Major flow will continue to outlet to Elm Street with a maximum ponding depth within the parking lot of 0.23m.

5.0 CONSTRUCTION PRACTICES/EROSION AND SEDIMENT CONTROL

Erosion and sedimentation control measures should be implemented during construction and until ground cover is established. Geotextile should be placed under all catch basin and manhole castings to prevent the flow of construction and first flush run-off silt and sediment into storm sewers and receiving watercourses. The use of straw bales and silt fence should be implemented to provide quality control on any overland flow to ditch drainage systems. Silt fence should also be placed along the perimeter of the site adjacent to existing development.

Finished earth surfaces on the site will be topsoiled and sodded. Areas susceptible to erosion will be protected with staked sod or rip-rap as required.

6.0 ELECTRICAL AND UTILITIES

It is anticipated that Entegrus, Bell Canada, Rogers, and Enbridge Gas will have adequate capacity available on Elm Street or First Avenue for connection/extension of underground utilities to service the proposed building. Further contact with the various utility companies will continue as Site Plan approval is obtained.

** ** **

If there are any questions, please do not hesitate to contact this office.

All of which is respectfully submitted,

Zachary Rachar, E.I.T



Deren Lyle, P. Eng.

ZDR/kc

APPENDIX 'A'

Domestic Water Demand Calculations
OBC Fire Demand Calculations
FUS Fire Demand Calculations

Fatime Sherifi
300 Elm Street - Functional Servicing Report
City Of St. Thomas

CJDL Consulting Engineers

PROJECT No. 25012
DATE: 01-Oct-26
DESIGN BY: ZDR
CHECKED BY: DJL

DOMESTIC WATER DEMAND CALCULATIONS

300 Elm Street (Both Buildings) - Functional Servicing Report

Average Daily Demand Determination

Area	0.2	ha
Demand Per Ha:	28.0	m^3/ha (St. Thomas Design Guidelines 2023 (Commercial Use))
Design Demand:	5.9	m^3/day
Design Demand:	5855.4	L/d
Average Daily Demand:	**0.07**	**L/s**

Peak Hour Demand Determination:

Average Daily Demand:	0.07	L/s
Peak Hour Factor:	7.8	
Peak Hour Demand:	**0.53**	**L/s**

Max. Day Demand Determination:

Average Daily Demand:	0.07	L/s
Max. Day Factor:	3.5	
Max. Day Demand:	**0.24**	**L/s**

AVERAGE DAILY DEMAND:	**0.07**	**L/s**
PEAK HOUR DEMAND:	**0.53**	**L/s**
MAX. DAY DEMAND:	**0.24**	**L/s**

No.	REVISION	BY	DATE

Fatime Sherifi
300 Elm Street - Functional Servicing Report

CJDL Consulting Engineers

PROJECT No. 25012
DATE: 01-Oct-26
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CHECKED BY: DJL

ONTARIO BUILDING CODE FIRE DEMAND CALCULATIONS

300 Elm Street Proposed Building (Largest Building) - Functional Servicing Report

Building Volume Determination

Average Floor Area:	273.6	m^2 (Proposed Building)
No. Storeys:	1.0	(Including Below Grade Storeys)
Height Per Storey:	3.5	m

Building Volume (V): 957.6 m^3

Water Supply Coefficient Determination

Building Class: D (Per OBC Section 3.1.2.1.)

Construction Type: Building is of combustible construction with fire separations and fire-resistance ratings provided in accordance with Subsection 3.2.2. of the OBC, including loadbearing walls, columns and arches. Noncombustible construction may be used in lieu of fire-resistance rating where permitted in Subsection 3.2.2. of the OBC.

TYPE OF CONSTRUCTION	Classification by Group or Division in Accordance with Table 3.1.2.1 of the Ontario Building Code				
	A-2 B-1 B-2 B-3 C D	A-4 F-3	A-1 A-3	E F-2	F-1
Building is of noncombustible construction with fire separations and fire-resistance ratings provided in accordance with Subsection 3.2.2. of the OBC, including loadbearing walls, columns and arches.	10	12	14	17	23
Building is of noncombustible construction or of heavy timber construction conforming to Article 3.1.4.6. of the OBC. Floor assemblies are fire separations but with no fire-resistance rating. Roof assemblies, mezzanines, loadbearing walls, columns and arches do not have a fire-resistance rating.	16	19	22	27	37
Building is of combustible construction with fire separations and fire-resistance ratings provided in accordance with Subsection 3.2.2. of the OBC, including loadbearing walls, columns and arches. Noncombustible construction may be used in lieu of fire-resistance rating where permitted in Subsection 3.2.2. of the OBC.	18	22	25	31	41
Building is of combustible construction. Floor assemblies are fire separations but with no fire-resistance rating. Roof assemblies, mezzanines, loadbearing walls, columns and arches do not have a fire-resistance rating.	23	28	32	39	53
Column 1	**2**	**3**	**4**	**5**	**6**

Water Supply Coefficient (K): 18

Spatial Coefficient Determination

Front:	0.00	(Distance =	19.8	m (Figure 1: Spatial Separation) (OFM TG-03-1999 Section 6.3)
Rear:	0.50	(Distance =	0.74	m (Figure 1: Spatial Separation) (OFM TG-03-1999 Section 6.3)
Left:	0.00	(Distance =	20.23	m (Figure 1: Spatial Separation) (OFM TG-03-1999 Section 6.3)
Right:	0.50	(Distance =	1.2	m (Figure 1: Spatial Separation) (OFM TG-03-1999 Section 6.3)

Spatient Coefficient Total (S_{tot}): 2.00

Fire Flow Determination

$$Q = KVS_{Tot}$$

Water Supply Coefficient (K):	18	
Building Volume (V):	957.6	m^3
Spatial Coefficient Total (S_{tot}):	2.00	
Minimum Supply of Water (Q):	34473.6	L

Building Code, Part 3 Buildings	Required Minimum Water Supply Flow Rate (L/min.)
One-storey building with building area not exceeding $600m^2$ (excluding F-1 occupancies)	1800
All other buildings	2700 (If **Q** ≤ 108,000L)(1) 3600 (If **Q** > 108,000L **and** ≤ 135,000L)(1) 4500 (If **Q** > 135,000L **and** ≤ 162,000L)(1) 5400 (If **Q** > 162,000L **and** ≤ 190,000L)(1) 6300 (If **Q** > 190,000L **and** ≤ 270,000L)(1) 9000 (If **Q** > 270,000L)(1)

Required Minimum Water Supply Flow Rate: 2700.0 L/min

Minimum Volume of Water Supply: 81000 L (Based on 30 min. minimum supply duration)

REQUIRED FIRE FLOW: 45.00 L/s

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300 Elm Street - Functional Servicing Report

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FIRE UNDERWRITERS SURVEY FIRE DEMAND CALCULATIONS

300 Elm Street Proposed Building (Largest Building) - Functional Servicing Report

Construction Coefficient Determination

Construction Material:	Ordinary Construction	
Fire Resistance Rating:	**1.0**	hours
Construction Description:	Exterior walls are of masonry construction (or other approved material) with a minimum 1-hour fire resistance rating, but other elements such as interior walls, arches, floors, and/or roof do not have a minimum 1-hour fire resistance rating.	
Construction Type (FUS, 2020):	Type III	
Construction Coefficient (C):	**1.0**	

Total Floor Area Determination

Largest Floor Area:	273.6	m^2 (Subdivided floor area if vertical firewalls have minimum 2-hour fire rating)
Storey of Largest Floor Area:	1	
Vertical Opening Protection:	Unprotected	(Only applies for buildings with Construction Coefficient (C) less than 1.0)
Number of Storeys:	1	(Excluding basements 50% or more below grade)
Vertical Firewall Separation:	No	(Only applies if vertical firewall has a minimum 2-hour fire rating)
Vertical Firewall Protection:		(Only applies if there is vertical firewall separation)
Vertical Firewall Separation Risk:		(Indicates if there is severe risk of fire on other side of vertical firewall)
Vertical Firewall Factor:	0%	(0% if there is no vertical firewall separation)
Total Floor Area (A):	**273.6**	**m^2** 100% of all floor areas

Occupancy & Contents Adjustment Factor

Building Class:	D	
Contents Hazard:	Limited Combustible Contents	
Occupancy & Contents Adjustment:	**-15%**	

Automatic Sprinkler Protection Adjustment

Automatic Sprinkler System:	No	(Per NFPA 13)
Standard Water Supply:	Yes	(Pressurized water supply, public or private, designed to handle Max Day +Fire Flow)
Fully Supervised System:	No	(Per NFPA 25)
Community Level Sprinkler Protection:	No	(Fully sprinklered/fire protected communities)
Automatic Sprinkler Adjustment:	**0%**	

Exposure Adjustment Charge

Front:	10.1%	(Distance =	19.8	m (FUS 2020)	(Sprinklered =	No	)
Rear:	23.8%	(Distance =	0.74	m (FUS 2020)	(Sprinklered =	No	)
Left:	9.8%	(Distance =	20.23	m (FUS 2020)	(Sprinklered =	No	)
Right:	23.0%	(Distance =	1.2	m (FUS 2020)	(Sprinklered =	No	)
Exposure Adjustment:	**66.6%**						

Fire Flow Determination

$$RFF = 220C\sqrt{A}$$

A.	Construction Coefficient (C) :	1.0	
B.	Total Effective Floor Area (A) :	273.6	m^2
C.	Base Fire Flow (RFF) :	4000	L/m (Rounded to nearest 1,000 L/m)
D.	Occupancy & Contents Adjustment:	-15%	
	O & C Fire Flow Adjustment:	-600	L/m
E.	Automatic Sprinkler Adjustment:	0%	
	Sprinkler Fire Flow Adjustment:	0	L/m
F.	Exposure Adjustment:	66.6%	
	Exposure Fire Flow Adjustment:	2665.466667	L/m
G.	Required Fire Flow:	6000	L/m (Rounded to nearest 1,000 L/m)

REQUIRED FIRE FLOW:	**100.00**	**L/s**

No.	REVISION	BY	DATE